

T02D01 – (2.1) The atom

Name _____

1. 2.1.1 State the position of protons, neutrons and electrons in the atom. (1)
- a. John Dalton (1776-1844)

b. J.J. Thomson (1856-1940)

c. Ernest Rutherford (1871-1937)

d. Niels Bohr (1885-1962)

e. Erwin Schrodinger (1887-1961) – Werner Heisenberg (1901-1976)

2. 2.1.2 State the relative masses and relative charges of protons, neutrons and electrons. (1)

Sub-atomic Particle	Symbol	Relative Mass	Relative Charge	Nuclide Notation

3. 2.1.3 Define the terms mass number (A), atomic number (Z) and isotopes of an element. (1)

a. Atomic Number:

b. Mass Number:

c. Nuclides:

d. Notation for an isotope:

e. Ion

i. Cation

ii. Anion

f. Isotope:

g. Deflection of subatomic particles

Deflection of differing subatomic particles through a magnet	Deflection of differing isotopes of like elements through a strong magnetic field

4. 2.1.4 Deduce the symbol for an isotope given its mass number and atomic number. (3)

a. How is mass number calculated?

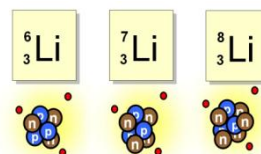
b. How is charge calculated?

5. 2.1.5 Calculate the number of protons, neutrons and electrons in atoms and ions from the mass number, atomic number and charge. (2)

Isotopic Notation	Longhand	Protons (Atomic Number)	Neutrons	Electrons	Mass Number
O^{2-}	Oxygen-18				
Co^{2+}	Cobalt-59				
S^{2-}	Sulfur-35				
C	Carbon-14				
P^{3-}	Phosphorus-32				

6. 2.1.6 Compare the properties of the isotopes of an element. (3)

a. Compare the properties of each of the lithium isotopes:

b. Provide the possible forms of CO_2 given the availability of ^{13}C , ^{14}C , ^{16}O , and ^{17}O :

7. 2.1.7 Discuss the uses of radioisotopes. (3)

Radiation	Relative Charge	Relative Mass	Nature	Penetration	Deflection by electric Field

a. Carbon-14 beta decay:

b. Uranium-238 alpha decay:

c. When does gamma radiation occur? What is it?